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OFFICE OF MYCOLOGY AND DISEASE SURVEY

Vol. XV June 15, 1931 Number 6

DISEASES OF CEREAL CROPS

OAT SMUT IN THE SOUTH ATLANTIC STATES

By R. J. Haskell

Fall-sown oats in some of the Southern States are showing rather unusual amounts of smut this year according to advice received from the Division of Cereal Crops and Diseases, Bureau of Plant Industry. T. R. Stanton and F. A. Coffman, after an inspection of fields and test plots in the South Atlantic States from Virginia to Georgia, report more trouble from oat smut than usual.

The Fulghum variety,,which is very popular in the Southern States for both fall and spring sowing, has generally been considered resistant to smut, but this year it has more smut than the other red-oat varieties such as Red Rustproof, Appler, Texas Red, etc. As one of the reasons for the increasing prevalence of smut, Dr. V. F. Tapke of the Cereal Division, is of the opinion that there has recently been in progress a gradual increase and spread of a physiologic form or race of smut that can attack varieties such as Fulghum and Kanota. Undoubtedly also seed-bed conditions last fall favored smut infection as it is known that large amounts of smut usually follow when oats are sown in soil with high temperature and low moisture content. (June 5)

FLAG SMUT OF WHEAT IN KANSAS

L. E. Melchers and C. H. Ficke report that flag smut of wheat (*Urocystis tritici*) has been found again this year in the vicinity of Leavenworth, Kansas, on Harvest Queen wheat. The percentages of infection range from 2 to 15 per cent. (A. G. Johnson)

POWDERY MILDEW IMPORTANT ON WHEAT AND BARLEY IN KENTUCKY

For the first time in at least eleven years mildew (Erysiphe graminis) is likely to be a limiting factor in yield of barley and wheat. A barley field was seen in Jessamine County in which the lower leaves were 100 per cent affected and nearly uniformily white. The middle leaves averaged about 50 per cent and the upper leaves 25 per cent of the leaf surface covered with mildew. This was general over a 12-acre field. Other fields were seen with similar infection and some with less. Wheat is just coming out of the boot. The stands are extremely thick in both wheat and barley and the straw is very tall. The leaves are dark green. Mildew nearly covers the lower leaves of wheat and in some instances is well up on the plants with a few spots on the upper leaves.

A small amount of mildew has also been found on rye and on spring oats. (W. D. Valleau)

SCLEROTIUM FULVUM ON WINTER WHEAT IN MONTANA

Killed one spot in a winter-wheat plot on Experiment Station. (April 11)

Killed seriously large patches in three large fields of winter wheat north of Bozeman. (April 27)

P. A. Young

VEGETABLE DISEASES

OOSPORE STAGE OF PERONOSPORA VICIAE ON PEAS

By G. B. Ramsey

While the downy mildew of peas caused by Peronospora viciae has been reported to the Survey from a number of states scattered throughout the country, no mention has been made in any report of the presence of oospores of the fungus. On May 15, Dr. G. B. Ramsey wrote as follows:

> "One of the most interesting diseases that has come to my attention for some time is what appears to be the oospore stage of Peronospora on peas. This trouble was first called to my attention in a lot of peas from Santa Maria, California, April 13. The pods showed large irregular, greenish-buff to yellowish, slightly raised areas. There was little or no evidence of the fungus on the surface, but microscopic examination of the tissues in these blistered areas

revealed hundreds of rough coated oospores. I find no reference to this type of blemish except in Sorauer, under a discussion of excrescences.

"The inspector whom I asked to visit the field in California where these peas were harvested, reported that the vines showing a grayish mildew and the greenish-yellow spots on the pods were located in a low place in the field, well protected from winds.

"A pod blemish similar to that of the California stock has been found this month in Mississippi peas from the Crystal Springs area."

Specimens of peas from Tennessee affected in the manner described have been received from Dr. Ramsey. His identification was verified by Miss Vera K. Charles.

POTATOES PRODUCING TUBERS WITHOUT VINES IN WASHINGTON

A very interesting case of the "Knollensucht" (tubers but no tops) has been reported from the Ellensburg district, a 90-acre field being affected. "The field was rather spotted when it came up. Some rows were alright, others were partially affected, while some rows showed practically 100 per cent tuber formation, either sessile or on short stolons without the formation of any aerial shoots." One-third of the field has been plowed up for replanting, while the other two-thirds is being replanted by hand where the plants are missing. This is the third time that this condition has been noted in severe form in commercial fields in Washington. (F. D. Heald, June 4).

YELLOW DWARF OF ONION REPORTED FROM KENTUCKY

Dr. W. D. Valleau reported that "An entire patch (size not stated) of onions at Shady Grove, Kentucky, wilted down in a few days. Some of the leaves are very prominently marked with yellow stripes." (May 18) His diagnosis of yellow dwarf was confirmed by Dr. R. H. Porter, Extension Pathologist of the Iowa Agricultural Experiment Station, who said that the specimens sent by Dr. Valleau were typical of this virus disease. This is the first report from Kentucky.

LATE BLIGHT ON TOMATOES IN THE LOWER RIO GRANDE VALLEY OF TEXAS

By J. J. Taubenhaus and Walter N. Ezekiel

A serious outbreak of late blight of tomatoes occurred in the lower Rio Grande Valley of Texas during the spring months of this year. Bach (Pl. Dis. Reptr. 15: 46. June 1, 1931) has already reported the appearance of late blight on potatoes this year, for the first time in this region. The disease apparently spread from the potatoes to the tomatoes. On both hosts, the disease was

caused apparently by the same organism, which was identified as Phytophthora infestans.

The weather conditions during the growing season of both potatoes and tomatoes (up to about May 1) were unusual and apparently explain the prevalence of late blight. There was a long-continued, unseasonably cool spell, with frequent showers and continued cloudy or foggy weather.

Late blight was found to be widely distributed in Cameron County, where in some fields the disease destroyed as much as 80 per cent of the tomato crop. For Cameron County as a whole, the damage was estimated at about 50 per cent of the crop. Only traces of late blight were found in the two adjoining counties, Willacy and Hidalgo. The disease also caused some damage to tomatoes in Brazoria and Galveston Counties. A rapid survey has been made in Northeast, East, and East Central Texas, where potatoes and tomatoes are being grown this year on an extensive scale, but late blight has not been found in these regions.

Some losses occurred from rotting in transit of fruits which did not show symptoms at the time of packing. Shipping tests showed that the development of late blight rot in transit and subsequent storage was roughly proportional to the prevalence of late blight in the fields from which the tomatoes were secured.

SWEET POTATO DISEASES IN ARKANSAS

Black rot (Ceratostomella fimbriata) is reported by Mr. Paul H. Millar, Chief Inspector of the Arkansas State Plant Board as being rather prevalent over the state in beds. It is reported that many beds have several infected potatoes to the square yard giving rise to clumps of infected slips.

Sclerotium rot (Sclerotium rolfsii) is reported by Mr. Millar as rather prevalent in beds in central and southern Arkansas and doing considerable damage. (V. H. Young, May 27)

FRUIT DISEASES

UNUSUAL PREVALENCE OF PEACH LEAF CURL (EXOASCUS DEFORMANS)

Pennsylvania: Last week in Erie County I observed that peach leaf curl is appearing in epiphytotic form. Unsprayed trees are affected ninety to one hundred per cent and I did not go to an orchard but what there were some curled leaves. (George L. Zundel, June 1)

Kentucky: Leaf curl is particularly severe on unsprayed trees, while on sprayed trees it has been well controlled only where the spray was applied in January or earlier. (W. D. Valleau, May 15)

Tennessee: This disease seems to prevail over the entire country and especially in and around Memphis, Tennessee. It seems to be damaging to a great extent the peach crop, causing them to fall off prematurely. (J. W. Robison, May 11)

Arkansas: Unusually prevalent this season, especially in the Crowley Ridge region of eastern Arkansas, but well distributed over the State including the commercial peach region of Southwestern Arkansas. Many trees will be almost completely defoliated. Apparently caused by the especially cool wet weather this spring and by the fact that many growers are using only lubricating oil emulsion as a scalicide in their dormant spray without the addition of any fungicide. (V. H. Young, May 27)

Ohio: Peach leaf curl is bad in orchards and home grounds in Miami County. The peach industry is not very important in this section of the State. (E. W. Mendenhall, June 5)

Washington: Temperature conditions have been very favorable west of the Cascades for leaf curl. Reports of the disease in severe form have come from Seattle (May 5 and 14), Port Townsend (May 14), and Ocean Park (May 15). (F. D. Heald, June 4).

PEACH BACTERIAL SPOT (BACTERIUM PRUNI) IN SOUTH CAROLINA

Mr. Lutken and Mr. Schilletter of the Extension Service have recently made a survey in the four Piedmont Counties of Spartanburg, Greenville, York, and Laurens. They found that the leaf infections are generally very light this season. In one orchard, they classified the fruit infections as light and in another medium. In all other orchards they could find practically no signs of fruit infections. Some of the orchardists are using zinc sulphate spray and leaf infections in their orchards are very light.

This morning I went through a narrow strip of the college peach variety orchard where there are about one hundred varieties in the strip through which I traveled. There was very little bacterial spot on the Yellow Hiley, Pioneer and Mayflower. The infections on Krummel's October and Red Bird were moderately severe and the latter variety was dropping quite a few leaves. (George M. Armstrong, June 6)

SPUR DROP (UNDETERMINED) OF RASPBERRY IN KENTUCKY

Dr. W. D. Valleau sends the following report for further information. Collaborators are asked to send any data which they may have on similar occurrences.

> "Two reports have been received stating that the fruit spurs on Latham raspberries are breaking off at the cane. The specimen received showed no sign of injury but looked as though it had been pulled or broken off the cane. Both growers stated that the situation was serious."

BLACK ROT (GUIGNARDIA BIDWELLII) OF GRAPE IN ARKANSAS

Practically none has appeared as yet on foliage and bunches but well developed spots with nearly mature spores found at the base of suckers in a considerable number of cases. This type of black rot, which was also very abundant last year, appears to be a phase of the disease which has not ordinarily been reported in the literature and evidently arises from spores borne on mummies on the ground being washed onto the lower part of suckers. Many of the lesions are frequently below the surface of the ground and all of them are relatively near the ground and all show distinct relation to contact with the soil. (V. H. Young, May 27)

OTHER REPORTS ON FRUIT DISEASES

APPLE: Scab (Venturia inaequalis) in Arkansas. Appeared rather abundantly on leaves and fruits, especially in unsprayed or poorly sprayed orchards. Appears to be a rather important disease this year. (V. H. Young, May 27)

CHERRY: Frost injury to sweet cherries in Washington. Late spring frosts have been responsible for a very large amount of injury to foliage of various deciduous-leaved trees, including both fruit and shade trees. Numerous inquiries and specimens have been received relating to the trouble on sweet cherries. Many specimens have shown a very extreme type of irregular shot-holing and laceration of the leaves. (F. D. Heald, June 4)

STRAWBERRY: Leather rot (Phytophthora cactorum) in Maryland was found at Accokeek, Prince George County, June 4, 1931, following the very heavy rain of May 30 and 31. This is a new locality for Maryland. (D. H. Rose)

BLACKBERRY: Orange rust (Kunkelia nitens) in Arkansas. Very abundant as usual on blackberries and dewberries causing an appreciable loss in many plantings. Many patches of wild blackberries show almost 100 per cent infection. (V. H. Young, May 27)

CURRANT: Powdery mildew (Sphaerotheca mors-uvae) in Washington. A very severe development of powdery mildew on currants was reported from Kent on May 20. There was an especially heavy development of the mildew on the fruit. This is the first severe development of powdery mildew on currants that has come to our attention during sixteen years in Washington. (F. D. Heald, June 4)

DISEASES OF TREES AND ORNAMENTALS

LILAC: Bacterial blight (Bacterium syringae) in Washington. The occurrence of bacterial blight of lilac was reported from Arlington, Washington, on May 16, 1931. The trouble was introduced a year ago on a new plant (origin not stated) and has since spread to all the lilacs in quite an extensive planting. (F. D. Heald, June 4)

LARKSPUR and other plants: Stem rot caused by Sclerotium rolfsii in the District of Columbia. Specimens of larkspur and violet were brought to my office. The grower said that cosmos and dianthus were also attacked. Plants are being killed in several spots in different parts of his border of annuals and perennials. Identification verified in Dr. Weiss's office. (R. J. Haskell, June 9).

SYCAMORE: Anthracnose (Gnomonia veneta) in Arkansas. Extremely abundant in Northwest Arkansas and presumably in other parts of the State, many trees being almost completely defoliated. (V. H. Young, May 27)

ELM: Leaf spot (Gnomonia sp.) in Oklahoma. Of late the leaf spot has become a serious pest, occasionally killing the tree. (F. M. Rolfs, June 5)

DISEASES OF SPECIAL CROPS

TOBACCO DOWNY MILDEW (PERONOSPORA HYOSCYAMI)

Isolated cases of downy mildew have been found in Southern Maryland by R. A. Jehle and in Virginia by R. G. Henderson. Reports from other states quoted below indicate that the disease is disappearing and plants are recovering. J. G. Gaines has sent a photograph taken May 11 showing complete recovery of a bed in Tift County, Georgia which had been severely infected on April 12. Plants from this bed were set in the field and the grower said that they were as good as any plants he had ever used, although every one had been severely affected. Only a trace of mildew was present in the field at the time of the report.

North Carolina: The disease is now well distributed in counties along the Virginia border. I observed it at Reidsville, Winston-Salem, and have had reports from Caswell, Stokes and Surrey Counties. Plant beds where the disease was once severe show new growth. (R. F. Poole, June 6)

* See also page 62.

I have examined the seed beds in Cumberland, Bertie, Jones, Duplin, Nash, Pender, Onslow, Johnston, Robeson, Chowan, Pitt, Harnett, and Green counties in the Coastal Plain. The disease seems general all over these counties. From the first of May until June 1st, tobacco was planted in the fields in the eastern part of the state. We observed the disease on the plant bed leaves, but it did not damage the later leaves coming on the plant. I have found very few cases where there was any indication of the growth of the plant in the field being checked by the disease. However, the growth in the seed beds was checked considerably. The interesting thing about the disease is that the seed beds actually recovered and the new growth coming on the plants was very healthy where the disease was most severe at one time.

I have inspected the seed beds in Vance, Granville, Wake, Alamance, Guilford, Stokes, Forsyth, and Surry counties in the Piedmont. We found the disease appearing in these counties about two weeks later than in the Coastal Plain counties. Planting is generally two to three weeks later in the P iedmont. We find the disease just as general in the plant beds in this section as it was in the Coastal Plain, but the growth in the fields has not gotten to the point that we can tell just what will happen there yet. The plant beds seem to be more severely damaged where they were in the more shady places. Undoubtedly plenty of hot sunshine will check the spread of the disease. (E. Y. Floyd, June 6)

My observations have been confined to Durham and Granville Counties. Among the 105 beds seen since May 23, 103 contained affected plants. Downy mildew is present in every seed bed in this area, if these examinations may be regarded as representative. During the last week in May it appeared in practically every seed bed in the section surrounding Winston-Salem, as judged from a few beds seen and from conversations with growers and county agents. The plants in the field seem to be growing nicely. As far as I can find, the new leaves formed after transplanting have remained free from downy mildew. (F. A. Wolf, June 8)

Georgia: Downy mildew has practically disappeared from the Georgia belt; the disease seems to be following the same course as it did ten years ago. Dry warm weather has persisted since the first week in May and since that time no infections have been observed. I do not believe the total mildew loss has been more than one per cent. (J. G. Gaines, June 6)

OTHER REPORTS OF TOBACCO DISEASES

Angular leaf spot (Bacterium angulatum) in Virginia: The plants in Virginia are still rather small but Mr. Godkin has already found Angular leaf-spot infection in a few beds in Halifax County. If the rainy weather continues, I am afraid there will be a lot of infection in the plant beds this season. (S. A. Wingard, May 16)

Angular leaf spot (Bacterium angulatum) in Georgia: We have observed angular leaf spot in Robeson, Sampson, and Johnston Counties. (E. Y. Floyd, June 6)

Wildfire (Bacterium tabacum) in Pennsylvania: Wildfire has made its appearance in Lancaster County seed beds, the first observations having been made May 20. T he extent and severity of the infections in the individual beds are considerably greater than last year. There has been quite an extended period of weather that has favored the development of the disease. Unsterilized old cloth and boards appear to account for the larger part of the cases. (W. S. Beach, May 26)

Black root rot (Thielavia basicola) in Georgia: Has been found in Lemon County in the Coastal Plain and in Stokes County in the Piedmont.

Drouth-spot in South Carolina: In the past three days I have received four specimens showing the physiological break-down, commonly called drouth-spot, which Dr. Gardner and others have associated with unbalanced chlorine. (George M. Armstrong, June 6)

Cold chlorosis in Kentucky: Reports of rather wide spread chlorosis of the bud leaves of tobacco plants have been received. The small bud leaves are yellow especially across the middle of the leaf and constricted at this point. Evidently due to low temperatures during the recent cool period. (W.. D. Valleau)

COTTON SORE-SHIN (RHIZOCTONIA SOLANI) IN ARKANSAS

Due to the unusually cool, wet weather during the first part of May, sore-shin is rather common, resulting in many poor stands and the necessity for re-planting as is almost always the case. (V. H. Young, May 27)

DISEASES CAUSED BY NEMATODES

TYLENCHUS DIPSACI ON HYPOCHAERIS RADICATA IN HAWAII

By G. H. Godfrey

In 1924 Godfrey and McKay (U. S. Dept. Agr. Bul. 1229) reported Tylenchus dipsaci on Hypochaeris radicata on the Pacific Coast, from Washington to California. Later, in 1926 and 1928, the writer found the nema on the same host on lawns at the University of California.

In the fall of 1930 Hypochaeris radicata occurred in great abundance in meadows at Olinda, Maui, on the slopes of Haleakala, at an altitude of 4000 feet. More than 50 per cent of the plants examined were heavily infested

with the stem nematode. Identification of the organism was verified in laboratory examinations. Typical swellings were found in leaf blades and midribs and in flower peduncles. Many infested flower heads were found.

STRAWBERRY DWARF (APHELENCHUS FRAGARIAE) FOUND IN MASSACHUSETTS

By G. Steiner

Under date of June 1, 1931, a strawberry plant said to exhibit symptoms of "dwarf", and having nemas in the bud and one the young leaves, was sent in by O. C. Boyd, Extension Pathologist of the Massachusetts Experiment Station, with the following descriptive notes:

> "The accompanying plant was collected at Falmouth, Massachusetts in a planting of strawberries shipped last year from the infested area of North Carolina. Symptoms are typical of those of dwarf, both in the old leaves and the 1931 growth. Furthermore, active nemas were observed in scrapings from 3 ages of 1931 leaves, including the very young bud, the distorted and much stunted older leaf, and the unfolding leaflets of about one inch in length. Adults, eggs, newly hatched nemas, and undifferentiated eggs were observed."

The plant was found to be heavily infested with Aphelenchus fragariae, the causal agent of the dwarf disease.

As will be seen from the map on page 15 of the current volume of the Reporter, the dwarf disease has been known for some time in North Carolina, Florida, and Louisiana, and was found during the 1930 survey in Delaware, Maryland, Virginia, Kentucky, Tennessee, and Arkansas. This is the first time that the dwarf disease or its causal organism have been observed in Massachusetts. It was evidently introduced in the shipment of plants from North Carolina. In addition, this discovery proves, as had been expected, that this nema can survive the northern winters unharmed, and that the apparent absence of dwarf disease in northern regions cannot be explained by the contrary assumption.

APHELENCHUS HELOPHILUS, A NEW PARASITE OF LILIUM SARGENTIAE

By Gerald Thorne

On May 22, 1931, several stem bulbils of Lilium sargentiae were received from Mr. Keith O'Leary, Yonkers, New York. The leaves were practically all dead and the bulbils showed brown, decaying lesions. Examination of the specimens revealed large numbers of what appears without doubt to be Aphelenchus helophilus deMan, 1884.

A seedling lily sent by Mr. O'Leary on May 26, 1931, bore one leaf about 40 mm. long and this leaf contained a considerable number of Aphelenchus helophilus. The abnormal symptoms exhibited by the leaf were thickened tissue,

frilled edges, and very small brown lesions. No nemas were in the bulb proper.

This is the first appearance of this species as a plant parasite. DeMan, 1884, secured his specimens from soil in a meadow and Goodey, 1928, collected them from grass blades.

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*DOWNY MILDEW OF TOBACCO IN VIRGINIA

The first observation of downy mildew was made in Patrick County on May 29. In two beds the infection was severe, in two other beds the infection was less severe, and in three other beds observed, the disease was not found. In Henry County a few diseased plants were noted in two beds. On May 28 a general inspection of plant beds was made in Pittsylvania County, and at this time downy mildew was not found. On June 4 County Agent Stone, of Pittsylvania County, reported seeing the disease in several beds and specimens sent in by him were found to be infected. A general inspection of plant beds was made in Bedford, Halifax, Charlotte, Campbell, Amherst, Dinwiddie, Brunswick, Prince Edward, and Washington Counties from May 11 through May 23. During this time the disease was not found. However, on June 3 and 4 specimens received from Halifax and Brunswick Counties were found to be infected.

On June 5 inspections were made in Mecklenburg County, where the disease was generally prevalent, and more or less severe in all beds observed. In all cases, plants set in the field from these beds looked to be recovering from the disease. Probably in some cases where the disease was not observed in earlier visits it could be found at this time.

(James Godkin, June 9)